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ABSTRACT

Half of this paper is addressed to the national phenomena of shrinking resources and expanding needs and their effect on society. After noting that increased productivity can be a major intervention factor in mitigating their effect, the author gives ideas about how vocational education can become increasingly productive and where it might begin. The second half of this paper consists of the author's answers to nine questions concerning the role of vocational education programs in relation to increased productivity, program planning, and program development. (HD)

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Occasional Paper No. 19

# PRODUCTIVITY: IMPLICATIONS FOR VOCATIONAL EDUCATION

by

Charles H. Buzzell
Associate Commissioner for Adult,
Vocational, Technical, and Manpower Education
U.S. Department of Health, Education and Welfare
Office of Education

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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The Center for Vocational Education
The Ohio State University
1960 Kenny Road
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## PREFACE

The Center for Vocational Education welcomed the lecture by Dr. Charles H. Buzzell, entitled "Productivity: Implications for Vocational Education."

Dr. Buzzell, Associate Commissioner for Adult, Vocational, Technical, and Manpower Education, Office of Education, addressed the phenomenon of shrinking resources and expanding needs and their effect on society. He suggests that increased productivity can be a major intervention factor in mitigating their effect. Dr. Buzzell concludes with some ideas about how vocational education can become increasingly productive and where we might begin.

Dr. Buzzell came to Washington from the Massachusetts State Department of Education, where he served as Associate Commissioner for Occupational Education since December 1970.

Born in Hartford, Connecticut, Dr. Buzzell was graduated from Hartford High School in 1951. After serving 2 years in the U.S. Coast Guard, he enrolled at Teachers College of Connecticut in New Britain, receiving a B.S. in industrial arts in 1959. He obtained his M.A. degree from the University of Connecticut in 1961 and a Doctorate from Rutgers University, New Brunswick, New Jersey in 1970.

Dr. Buzzell began his professional career as a teacher and guidance counselor at the Rockville High School in Vernon, Connecticut. He later served as an instructor at Central Connecticut State College in New Britain, and at Rutgers University. While at Rutgers, he was Assistant Director for an innovative teacher training program.

From 1969 to 1970, Dr. Buzzell was coordinator of the National Leadership Training Institute and Director of the Bureau of Professional Services, Division of Vocational Education, New Jersey State Department of Education.

He is presently a member of the Executive Board of the American Vocational Association, the Cooperative Education Association, Epsilon Pi Tau (Honor Society in Industrial Education), and Phi Delta Kappa (Honor Society in Education).

I take pleasure in introducing Dr. Buzzell's presentation, "Productivity: Implications for Vocational Education."

## PRODUCTIVITY: IMPLICATIONS FOR VOCATIONAL EDUCATION

Several changes now occurring, and likely to accelerate in the future, are of special interest to us in vocational education because these changes will affect what we do and how well we do it.

First, as a Nation and as a world community we will increasingly face limited or shrinking resources. Second, the need for goods, for services will continue to expand. All things being equal, the effects of the phenomena will be to create tremendous pressures on human as well as budget and environmental resources. With no intervention, those pressures could be considerable.

The implications for us in education and vocational education are pretty clear. If we are going to maintain our present quality of vocational education and if we are to address the future needs of this country, we must "work smarter." In effect, we will need to do more with less, and do it better. To mitigate the effects of shrinking resources and expanding needs, we in vocational education will have to become increasingly more productive and productivity oriented.

All of you may not agree with these assumptions of change, nor accept my personal conclusion that we must very soon—even now—look intensively to ways of making more effective use of our available resources for vocational education. But if you do, or if you'd like to speculate with me, here are some ideas to play with. Some ideas that I hope will serve as a springboard to our discussion which follows. I look to you as a sounding board, and in turn am eager for your critical response.

In the next few minutes, then, I'd like to comment briefly on the two phenomenon—shrinking resources and expanding needs and their general effect—and suggest that increased productivity can be a major intervention factor in mitigating their effect. I'll conclude with some ideas about how vocational education can become increasingly productive and where we might start.

If our future appears to be one of shrinking resources and expanding wants—and I think this is so—then it is important that we be aware of those changes in our world which are contributing to tightened resources. We are getting hit right in our educational budgets. We need, therefore, to reckon with the factors that cause us to compete harder for every education dollar.

Shrinking Resources: Our daily paper and our pocketbooks have a way of reminding us that we have a limited amount of available resources. The price of heating fuel, alone, this winter serves to remind us that shortages can promote price increases, and we all know what price increases can do to any budget.

Unemployment and Inflation—"Dollar-Eaters," so to speak—also cause our resources to shrink. An unemployed person cannot contribute to the tax base and may, at the same time, require unemployment compensation, in effect a dual drain on resources. Inflation, another "Dollar-Eater," also reduces the amounts we have to match against priorities because the items we may have purchased last year or six months ago cost more. Inflation contributes to the increased competition for available dollars.

Expanding Needs: Along with shrinking resources needs continue to expand. More people obviously mean more demand for goods and services—for food, for shelter, for a host of conveniences. Shifts in values also create a demand for new goods and services. For example, awakened interest in a cleaner environment, for improved public transportation, for safer cities, all prompt the need for additional services.

In recent years, the field of education has seen heightened interest in special education programs for the bilingual, the handicapped, the disadvantaged, and others. The need for such special programs has existed for a long time. Now, however, the American taxpayer is willing to pay for them. New programs cause us to make some very hard choices among priorities.

So it goes. Our needs continue to expand and the competition for available dollars stiffens.

The Effect: It doesn't take an economist to tell us that when we have a condition of shrinking resources and expanding needs something is going to have to "give." Predictable consequences are surely an intensive competition for dollars. And when the competition gets rough it's usually the high cost educational programs that are traded off—especially when their rate of return is not or cannot be carefully assessed.

Because the taxpayer will have less purchasing power, we can predict that fewer school bond issues will be accepted by the voters. I don't need to spell out for you what that means for education in general and your local vocational education program in particular. For a diversity of reasons when funds are "divvied-up," education and vocational education programs may not always vie successfully for available resources. And when this happens something usually "gives," that being the level or possibly the quality of our programs. In a budget bind, we find ourselves facing fewer, or no new starts and a general decrease in services.

Increase Productivity: How do we get ourselves out of this box? Well one way to modify the effects of shrinking resources against expanding needs is to become more productive. Put simply we are more productive when we get more education services out of the money, material, facilities and personnel that make up our resources for education.

Take one important education resource—personnel—for example. Almost 3.1 million persons in the United States are employed as classroom teachers. Now if the average annual salary for a teacher is around $10,700, it doesn't take long to conclude that personnel resources constitute the biggest chunk of our gigantic educational enterprise. And what is more, the average annual salary for those 3.1 million persons is rising each year for many reasons, including inflation. It follows, that if the education community can make more effective use of the talents of each teacher, then we will be able to provide more services for the same amount of dollar input, or less, or at minimum hold our present level and quality of education services.

Working "Smarter"—increasing productivity—is accompanied by important other benefits. When we work more effectively, the quality of working life tends to improve. We accomplish more of the goals we set out to achieve and we enhance that basic human desire to have some measure of

control over our work destinies. Increased productivity does not mean "speeding up" or working harder physically—the traditional image of the production line. Instead, productivity improvements often open up new opportunities to make work easier for people, more stimulating, and more pleasant.

I hope that I have at least piqued your interest in this subject of educational productivity. And if your curiosity has been aroused you are probably asking yourself the next logical question: "How do vocational education teachers or administrators work more productively?"

Increasing Productivity in Vocational Education: I know of no "cookbook" approach, and even if there were it would not be a sure guide. The means of increasing productivity are on the magnitude of the collective work activities we Americans engage in. We are not without some guides, however, and there do appear to be some principles related to productivity and some points of intervention in the education process that have a high yield potential for increasing productivity.

For many years productivity experts have been applying their expertise to the Goliath of American industry, the assembly line. The image is of the notebook-carrying, frowning expert who is urging us to work faster and faster. However, it was these early experts who helped develop a body of knowledge, some principles, that have meaning for us here today.

Certain major factors have been identified that when applied to any set of tasks—an assembly line or even a service-oriented discipline such as education—are likely to result in productivity increases. They are:

The increased knowledge and skill of the workforce;

Economies of scale;

Technological improvements; and

The whole complex matter of timing in any task or set of tasks.

Each of these factors is potentially useful to us as we examine ways to increase productivity in vocational education. Each can be applied creatively to key points of intervention in the education process to enhance productivity.

So keeping these in mind, I'd like to identify what I see as four potentially high-yield points of intervention in the vocational education process. You'll readily identify the following as the four major elements in any formal education process:

— The Curriculum

— The Teacher

— The Learner

— The Learning Environment

Obviously these are, or had better be, highly interactive. But for this brainstorming session, I want to deal with each separately.

Education programs in the United States are expected to produce graduates who have achieved a measure of competence in communication and computational skills, in problem solving, in interpersonal relationships and in the skills required for effective citizenship. Indeed these are as relevant to our lives today as they were 100 years ago, and will be in the future. They are highly transferrable to all kinds of life situations, including the work place. They are essential elements in the body of knowledge we attempt to transmit to learners. They are vastly important.

But how sensitive to the real world are we in the educational community if we throw students on the job market—and for most that is where they go after leaving our doors—with these basic competencies but with no job-specific skills? I suspect not very sensitive. No matter how good the general education of the graduate, the graduate who, in addition to these essential competencies, has the ability to type at 60 words per minute error free or who can program a computer or solve a complex mathematical problem is going to be more immediately productive.

I am starting from the premise, then, that vocational education is a productivity-oriented discipline. It is addressing the need of the Nation's economy for citizens with job skills and it is accomplishing this by integrating two essential bodies of knowledge—the basic knowledge and competencies which all citizens must have to function and the body of knowledge surrounding a specific occupation.

One of those bodies of knowledge, the job-specific, is characteristic of the discipline of vocational education. I'd like therefore to focus on it as a significant point of intervention in catalyzing increases in productivity in vocational education.

The raw material for vocational education is literally the body of knowledge—the concepts, understandings, skills, techniques, as well as attitudinal requirements that every graduate or leaver of our programs requires to perform on the job at maximum effectiveness. Some of this body of knowledge is peculiar to a given job; some can be easily transferred to other jobs. For most jobs that body of job-specific knowledge is highly dynamic and, therefore, an important area on which to focus.

The question then is how can we restructure, revise, expand or reorganize job-specific knowledge to facilitate its transfer to learners? Even more important, how can we assure that the most appropriate body of knowledge surrounding a particular job or cluster of jobs is conveyed to the learner?

Processes are available to us that can assure highly relevant curricula. At the risk of reiterating the obvious let me cite two very important ones. First, I would mention follow-up as a key technique, follow-up of both the graduates of vocational education programs and their employers. In times of a tight budget there is a tendency to drop formalized follow-up activities as being too expensive. I don't believe we can afford this kind of trade-off and retain the relevancy of the job skills we are expected to be delivering to learners.

The effective use of committees consisting of persons from relevant businesses and industry is another important means for assuring curriculum relevance. These committees of key employers in the community can provide invaluable feedback not obtainable elsewhere on the kinds of behaviors required by the job as well as important information on instructional material. Such committees can also provide an opportunity for the vocational educator to test the structure used in conveying a body of job-specific knowledge against the experiences of the graduates and employers. Through them, educators, for example, can assess the appropriateness of simulation versus the need for a more job-real training environment. The committees can perform an essential function in keeping educators on top of emerging trends, expected technological breakthroughs

which are frequently accessible only through the employer who has a vested interest in such developments. All occupational areas in vocational education do not avail themselves of the expertise of committees of employers. It would be well, I think, to reexamine their utility in a wider range of instructional programs.

Any effort to increase productivity in vocational education can be facilitated by the technique of asking some sharply focused questions. For example, can we actually design and accept a process where we identify expected outcomes of a particular program of instruction and give credit to the learner who has already acquired essential knowledge and skills? Is it possible to start with the learning objectives and the needs of the student and use that as a basis for determining optimum class size? Is the job-specific knowledge we are conveying truly the most current and relevant? Should other related or new bodies of knowledge be included? In addition to committees of employers, are we harnessing all appropriate community resources—private industry as well as public service—to help us do our job?

Can we step outside of the discipline of vocational education to look at important related areas which indirectly, and sometimes directly affect productivity? Have we, for example, carefully examined the losses in productivity brought about by some 6 million industrial and work-related accidents that occur in a given year, and not to mention the human anguish they represent? What role do you see educators playing in the effort to engender a high degree of safety awareness as well as safe working techniques?

These and other questions which deal with curriculum as a significant point of intervention, if examined with imagination, creativity and some daring, can point to new directions for vocational education, and possibly for the education community as a whole.

The second point of intervention is the vocational education teacher, the key variable who can either facilitate or impede the learning process.

This resource—some 300,000 teachers, administrators and related personnel in vocational education—constitutes a very large and important part of our budget for vocational education. It is a very useful area to examine and one which has potential for yielding vast increases in productivity in all of vocational education.

The most productive teacher (all other things being equal) is the teacher who has a high degree of knowledge of the art and science of teaching, in addition to a depth and breadth of knowledge in a particular discipline. The body of knowledge surrounding the teaching-learning process itself becomes a key point of intervention.

The extent to which the vocational educator has incorporated the essential body of knowledge surrounding the teaching process—those techniques, processes, and understandings of human development and motivation—will, in large measure determine the effectiveness with which the essential knowledge of a discipline is conveyed. Assuming that the acquisition of the body of knowledge surrounding a specific job such as automotive mechanics can be facilitated by a teacher who is highly knowledgeable and skilled in the art and science of teaching, we might then want to examine how we train the professionals who work in vocational education.

Is the way we currently train vocational teachers and administrators the most effective? How can teacher education programs more effectively make available the bodies of knowledge surrounding the teacher's job? What new knowledge, skills, understandings should we now be including in that body of essential knowledge we seek to transfer to the potential vocational education professional?

Do we need to cut away some deadwood? Are we taking full advantage of the body of knowledge generated by research in education and vocational education?

These and other questions which wrap around the teacher, who is another significant point of intervention, can point the way to increases in productivity.

The next point of intervention I'd like to focus on is the learner, the object of our educational efforts. Fortunately, some of the great researchers in cognitive and developmental theory have marked trail for us. While psychologists disagree among themselves on many issues relating to learning, a body of fairly firm facts has accumulated from which we can evaluate and predict human behavior in the classroom. We know, for example, that readiness for any new learning is a complex product of interaction among many factors including sufficient physiological and psychological maturity, sense of the importance of the new learning for the learner and mastery of prerequisites for the specific subject to be learned, among others. The point is that educators have a body of knowledge, some reasonable assumptions about the learner that if employed throughout the learning process can effect increases in productivity.

The primary task, it seems to me, of any education program is to motivate the learner and then proceed to facilitate learning. The most cost-effective learning has the learner ready and the prerequisite learning in place. Short of this, remediation must be brought into the learning process.

Unfortunately, the administrative arrangements required in handling large numbers of learners in a public education setting often make us lose sight of the learning mode of the individual. Is it productive, for example, to keep youth in school through grade 14? According to Daniel Yankelvoich's fascinating report on youth entitled, *The New Morality: A Profile of American Youth in the 70's*, it may not be. Youth are indicating they want options other than starting to work full time or continuing their education in college. They want the option of dropping in and out of a learning setting. And, given the importance of motivation to learning it would be well, it seems, to listen closely to what youth are saying about the matter of timing in their learning processes. To ignore timing is costly in terms of human frustration, effort and money.

The fourth and final point of intervention I want to touch on is the learning environment. What is the most effective and appropriate environment for what is to be taught? The classroom? The job site? An alternating work and classroom experience? Here I am not talking just about facilities—how many shops, square footage, and so forth. (In more instances than we'd care to think, existing facilities have tended to dictate the structure of what will be taught, and how it will be taught.) I am talking about the way we organize for learning.

The way we organize for learning has vast potential for increases in productivity. For example, in identifying the most effective learning environment, the place to start may be with the learner and with the raw material of the body of knowledge surrounding a particular job. Obviously, the learning environment must be appropriate to the learner and sensitive to the human being who will be doing the learning. Cost-cutting at the expense of human dignity is, in the long run, no economy at all.

Back in the days of Horace Mann, the size of the learning group was largely dictated by the range of the teacher's voice. Now, the potential of technology, freeing us from this limitation, gives us the flexibility to teach individuals in a highly singular manner; to handle the traditional class-size group without the teacher; or to convey information to untold millions, as any early-morning ETV watcher can attest.

For example, computer technology has added many new terms to our education lexicon—CMI (computer-managed instruction) and CAI (computer-assisted instruction), to mention just two. The extent to which these and other technological innovations facilitate learning depends to a great extent on the teacher who, as a top-notch manager, can make some critical judgments about what "ed tech" can and cannot do for specific learning situations. Some have been turned off by educational technology. Anyone who has ever taught has had some less-than-satisfactory experience using it, sometimes because of the quality of the product itself, or its inappropriate use. However, pressure from taxpayers will catalyze a lot of innovation in education. The effective use of education technology—in appropriate learning situation—can increase productivity in vocational education by providing us with more flexibility in the selection of learning environments.

In structuring the learning environment simulation, the approximation of actual working conditions, will in many instances prove to be most cost-effective. In others, it will be essential to "mirror" the work environment. Each of these environments carries a differential price tag. The simulation used in the classroom training phase of licensed practical nurses for example, will be less costly than the "mirrored" learning environment for the astronauts which came about as close as man can get to duplicating an environment.

I would like to conclude these speculations on productivity by enlarging on the concept of learning environment. In its broadest sense the learning environment is the sum, but even greater than the sum, of all interactive factors that impinge on learning. This broader definition includes all of the points of intervention I've touched on and, of course, many more you could quickly identify—the teacher, the mental and physical state of the learner, the curriculum, the learning setting, the way learning is organized, and so forth.

The interaction of these factors appears to be highly synergistic. While we know a great deal about elements in the learning process, and indeed about the interaction of several aspects of these elements, I'd like to suggest that we need to know more about their dynamics, their interplay. When our base of knowledge here is expanded, and we have learned to apply this useful knowledge, we will, I believe, be even more productive in this discipline of vocational education.

## QUESTIONS

1. **How would you suggest we approach the problem of increased productivity in vocational education programs?**

   In looking for ways to increase productivity in vocational education, a key point of intervention is the curriculum itself. Here, it is important to keep two things in mind. First, it is essential to constantly assess exactly what we wish to provide—is it actually going to be necessary or even useful to the student when he exits the system? This most basic of questions is far too rarely asked. The second consideration is more subtle. We tend as instructors to teach the way we have been taught. In other words, we teach that with which we are most comfortable, which means inevitably those things arising out of our own educational and career experience. As a vocational education teacher then, I would be typically teaching from my own particular experience in my craft or occupational area. Therefore, it is essential that this "particular experience" be constantly tested against the new and emerging requirements of the marketplace. Without doing so, we can never assure relevant curriculum or increased productivity.

2. **How do we stimulate the state and local programs to make use of the quality-tested products and curriculum materials that agencies such as the National Center for Vocational Education located here at The Ohio State University has developed? Isn't this the main problem we're facing in that we are not effectively utilizing what is available to us in vocational education?**

   I quite agree that by bringing about a better "match" between vocational educators and the vast curriculum materials resources in this country we could increase productivity in vocational education. Agencies such as the National Center for Vocational Education have made impressive strides in recent years in addressing this problem. Yet we know we have a way to go—not only in disseminating information on the "good stuff" out there, but also creating a climate in which its value is clearly seen in relation to a particular education problem.

   Other tools, such as craft committees, are also underutilized or not always effectively used by vocational educators.

   Craft Committees and associations of employers that exist around the country, ought to be consistently asked for input into curriculum development. What they could specifically answer is the degree to which the "list of desirable educational outcomes" is still valid. Are the programs we nurture truly addressing the problem at hand, i.e., fostering skills essential to survival, necessary to turning a profit on the job. This is both critical and basic to the question of increased productivity. We might also poll these committees about the degree to which new materials, new processes, new technology ought to be delivered through the formal classroom structure. There is typically a technological gap between industry and the classroom. This is because the professional craftsman is forced to keep up with technological change to stay in the business, but the teacher is not; so often the classroom lags far behind.

Another control we have on the level of productivity is the degree to which we are clear on our goals for the student himself. We must be very precise when we speak of what we want the learner to acquire, and even more precise on what we want him or her to demonstrate. Without this precision, we are helpless—without a definite destination, we cannot discover the most cost-effective way of getting there. Something of a trap can grow out of all this precision of definition, however, for we must not totally focus our curriculum on measurable manipulative skills at the expense of those educational benefits more difficult to assess. There are essential attitudes and behaviors which must be carefully fostered in the student by the vocational system. These cannot be ignored just because they are difficult to define and measure.

3. How do we in vocational education begin to develop a data base which truly reflects the impact we are having on society and the nation's economy?

Evaluating vocational education in impact terms is one of the most challenging tasks in our profession today. The solution seems blatantly obvious at first glance—one need merely judge the quality of the education by the employment rate of its graduates—if it's 30% we're doing a lousy job and if it's 90% we should all get raises. It is unfortunately not that simple. To get an accurate picture of impact, and indeed of productivity, one must take the complex components of education, business, and vocational training; chop them up into little bits and reform them into the intricate machinery of what we are trying to describe. Then at one end you feed in everything considered input: dollars, people, books, etc. and on the other you get out something you call output—which may or may not have an impact. When we take merely the employment figures of our graduates, we are ignoring this complex machinery and painting an artificial and unrealistic picture. Employment is a function not only of training, but of the economic climate of the nation. Jobs alone are an incomplete measure of impact, and do not address the quality of instruction. When we speak of "employability" we speak not only of training, but of the sophistication of the employer in selecting employees, of the economic climate, of the efficiency of placement programs, and so on. Unfortunately, the impact of vocational education is being currently judged almost exclusively by the level of placement. This is a mistake not only in the distorted picture it gives of employability itself, but in the way it obscures the larger issues. Ultimately, the significant impact I must describe when I appear on the Hill is the impact on the larger social issues of vocational education programs: of increased public health, of increased public safety, of reduced unemployment.

4. How do you suggest this data be aggregated and by whom?

Data for assessing the impact of vocational education on some of our Nation's key priority areas seems to me already aggregated by many agencies and organizations. The key question is how it can be brought together to one place, sorted, and assessed. The Bureau of Occupational and Adult Education has taken some first steps toward a solution to this problem. The Bureau has underway the development of a National Information System for Occupational and Adult Education (NISOAE) that will support the unique policy and planning requirements of not only BOAE but planners at the local and state levels as well. NISOAE is a computer-based program which has an enormous capacity to build models of the flow of students into and out of both training and work. We know our outputs in OE are, like your own, impacting on some key national priority areas. Down the road, NISOAE will help us get a handle on the quality and magnitude of that impact.

5. **Are there, or will there be funds available in the future to deal with the problem of increasing the productivity of vocational education programs?**

There is now, I think, a real focus on productivity in Congress—a focus more on industry than education, I suppose, but nonetheless it is there. In terms of significant dollars available for productivity in education, I think there are several possibilities, among which might be the new Quality of Life Legislation that is being considered on the Hill even now. One problem, of course, is defining productivity itself. If you get three top educators together, you are likely to receive three different definitions of that word, and this makes it difficult to channel money into productivity—exactly where will it go?

I suspect if one took the time to review the discretionary programs under the Vocational Education Act over the past five years—and did so with a broad definition in mind—the focus of many projects would fall out under the heading "productivity-oriented." Practically speaking, of course, the education community needs to put its considerable brain-power to work on this issue. We should be able to communicate with one another when we speak of increased productivity or attempt to describe the process itself.

I can't tell you if there will be funds available for educators to focus on the issue of productivity. But I am sure that this issue is going to gain considerable momentum as a topic in public forums and then—who knows?

6. **What is the Bureau of Occupational and Adult Education doing to insure increased levels of productivity in vocational education programs?**

Significant activities for the Bureau will, of course, take a more concrete shape when we see the new legislation; but I think I can give you some idea of our directions and concerns at the present time. We are particularly concerned about the accountability of the practitioners in the field, a concern which was surfaced by the latest GAO report on vocational education, and which has found its way into virtually all of the vocational education legislation now in the hopper. To begin with, I suspect you will see in the Bureau a continuation and increase in the emphasis given to holding the states accountable for the resources we funnel into them. This emphasis alone, I think, will do much for productivity. Our ongoing Management Evaluation Review for Compliance is a specific case in point.

Other significant concerns of the Bureau in the coming years will include the special problems of major cities, and the converse difficulties presented by rural isolation. Our primary consideration in all the programs will be the degree to which there are social gains when one invests in vocational education. Thus productivity will be always foremost among the factors influencing our policy-making.

Speaking of policy, I would like to discuss a problem I have had my eye on for some time. In foreign countries, particularly the nations of Continental Europe, when the employment rate goes down, large investments are made in those who are unemployed to make them more productive when employment rises again and they can once again be pulled back into industry. We haven't discovered that yet. Our public service jobs are, I fear, little more than holding patterns. We take an unemployed person for a year, provide him or her with a salary, but at no time provide any form of significant education or training. Our focus seems to be on putting bread on the table—certainly essential—but not to seek any new opportunities for occupational

involvement, growth, or skill-improvement. When lay-off time comes around again at the next economic slump, they will again be the first ones to go. This process of negative personal impact is a significant concern of the Bureau and it will surface over the next year and a half as the seat of legislation undergoes changes. Unfortunately, we have very little hard data we can present to the Congress which will say explicitly "if you invest this magnitude of resources, you will have this magnitude of societal impact." Without those data we must rely on instinct, and the Congress is becoming rather hard-nosed about instinct.

7. **How do you suggest we approach the problem of productivity in vocational education and avoid the possible problem of sacrificing program quality for fiscal efficiency?**

When I use the term "productivity," at no time do I mean reduced quality. I am saying this: "Tell us what you want to achieve, then examine the strategies which accomplish that end. Cost those strategies out and seek the one which offers the most for the least." We are at the point in our history where this way of approaching a problem has become necessary. Let me give you an example of productivity from the trades. In 1931, to put a working electrical outlet in the wall, it cost about $6.00. Today to put that same working outlet in costs—about $6.00. Amazing, you say. And it is amazing, considering that an electrical worker was paid about $0.35 an hour in 1931 versus $10.00 an hour today. The reason it can be done for the same cost is that the materials, processes, and techniques are far more efficient than those used in 1931. I am suggesting we need that same application, that creativity, that pressure, that same kind of forward thinking in vocational education at the instructional level. When we consider productivity, we are considering cost versus benefit, not looking simply to cut down on the amount of money we're spending. To do this, we must constantly wage battle against the current tendency to go for the cheapest program available. It is our responsibility to offer logical arguments against such short-term gain when it will be followed by an inevitable long-term loss.

8. **How is the Bureau dealing with the problem of sex stereotyping in vocational education programs?**

Believe me, we are wrestling mightily with this issue in the Central Office. Vocational education, more than any other form of education is faced with this problem on a daily basis. Women are simply found less in some programs than in others. When we turn to the State Directors and say: "You are in violation of Federal law, just look at the segregation among your programs," they turn back to us and say: "listen, any girl who wants to be an auto mechanic can enroll—they just don't want to be auto mechanics." Our problem is this: If all the programs in vocational education were as open as we could make them, if we broke down all the subtle barriers to sex-mixing that are in operation, where would women go? Would they follow the same pattern of enrollment they follow now or not? My instincts tell me they would not follow the same pattern, th there would be some very interesting changes. We cannot take a poll to find out what women think, where it is they want to go, and then shape our programs to fit them—we have not the time, money, or facilities to perform such a momentous task. We can only keep it ever in mind that these goals are real, and on a daily operational basis try to make things as open as possible. Now this takes some good solid daily kicking at the system as it stands now, but without that kicking, we will never utilize the female creativity stagnating in this country today.

9. **What kind of input (people involvement) from the field are you getting in relation to your planning for elimination of sex stereotyping in vocational education programs?**

We have and are continuing to bring in representatives of what we consider to be significant women's groups for the purpose of advising us on barriers to vocational equity. We take this seriously and we have, therefore, added to Bureau staff a Special Advisor for Women's Issues, a position for the purpose of facilitating communications with "significant others" inside and outside of OE on issues affecting the vocational development of women and girls.

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